

Title: **METACARPOCORTICAL INDEX AS AN EARLY MARKER OF
MINERAL BONE DISEASE IN CHRONIC KIDNEY DISEASE**

ABSTRACT

Introduction:

Mineral bone disease (MBD) is a major manifestation of chronic kidney disease (CKD). It can be classified broadly into high and low bone turnover diseases. Differentiation between the two entities is essential because management of the two are diametrically opposite. Currently available gold standard to establish the diagnosis is bone biopsy and histomorphometry using double tetracycline labeling. This is an invasive modality. In our study, we have evaluated the usefulness of metacarpo-cortical index (MCI) which is a simple, easily available radiological index in identifying the nature of bone disease in patients with CKD.

Aims of the study:

1. To evaluate metacarpocortical index as a predictor of bone changes in chronic renal failure patients.
2. Correlation of metacarpocortical index with serum markers of renal function like urea, creatinine, calcium, phosphorus, alkaline phosphatase and parathormone.

Materials and methods:

This is a prospective case-control study, including 50 patients of CKD stage 3 and above and 50 healthy controls with no renal or bone disease. The study involves X-ray AP view of the left hand in the cases and controls. Age, gender of

the patients, duration and stage of CKD, serum creatinine, urea, calcium, phosphate, parathormone and ALP will be recorded. Chi-square test, T-test and pearson correlation analysis will be used appropriately to analyse the data.

Results:

In our study we were able to demonstrate a significant correlation of MCI with biochemical parameters in CKD cases, but the correlation between MCI and the other biochemical parameters did not reach statistically significant levels in the controls. In general, the direction of correlation of MCI is inverse with creatinine, phosphate, PTH and ALP, and positive with serum calcium concentration. Correlation with urea is inconsistent. The strongest association demonstrated was the inverse correlation of MCI with serum PTH concentration.

Conclusion:

With the results of our study, we are not able to suggest MCI as a gold standard for distinguishing the type of MBD. But due to its easy availability, relatively inexpensive and non-invasive nature, it could be a potential alternative to the invasive bone biopsy, especially when combined with biochemical parameters such as PTH, ALP, calcium and phosphate levels. There is a huge scope for future research on radiological indices for metabolic bone disease with larger samples and this could provide simple, cost-effective, quantitative measures of MBD.